FOR UNIT-3

Paper: E401 (INTRODUCTION TO DATABASE MANAGEMENT SYSTEM)

ER (Entity-Relationship)Diagram

Entity-Relationship Diagram displays the relationships of entity set stored in a database. In other words, the ER diagram helps to explain the logical structure of databases. It includes many specialized symbols, and its meanings make this model unique. The purpose of ER diagram is to represent the entity framework infrastructure.

The components of the ER Diagram are:

- Entities
- Attributes
- Relationships

The following are the different symbols used to draw ER diagrams

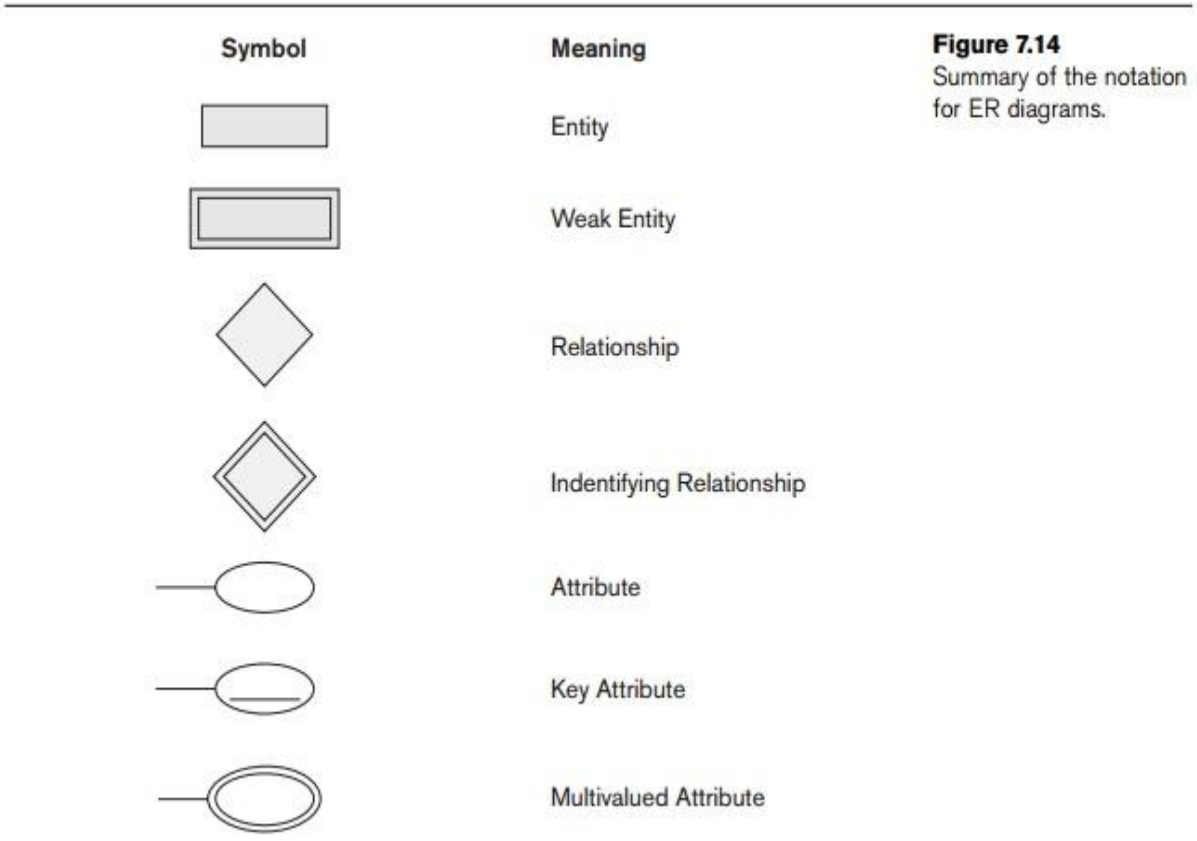
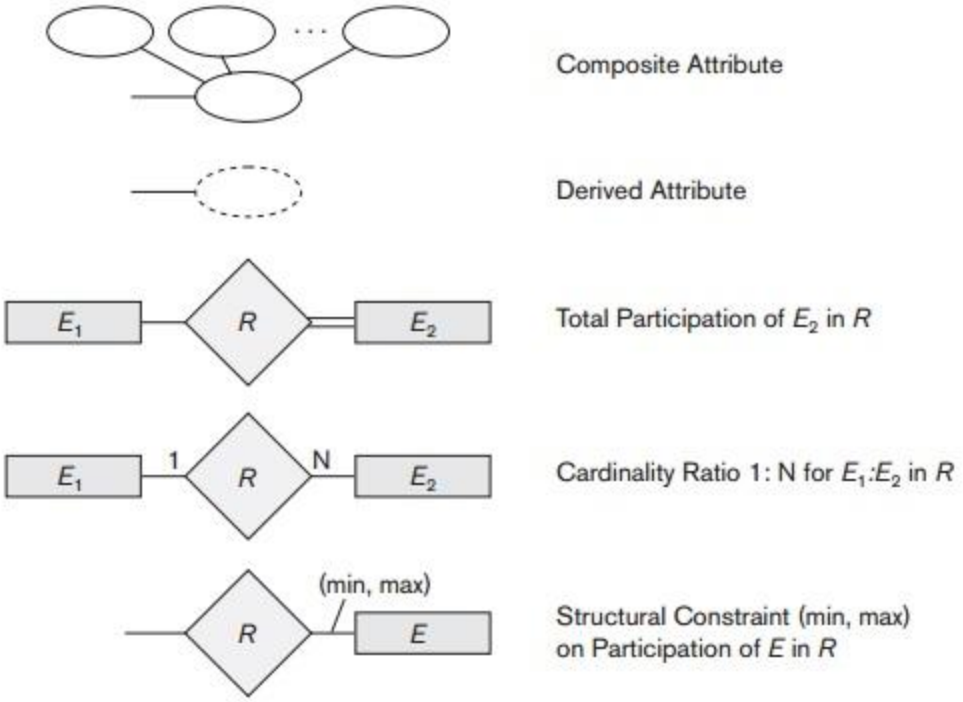


Figure 7.14
Summary of the notation for ER diagrams.



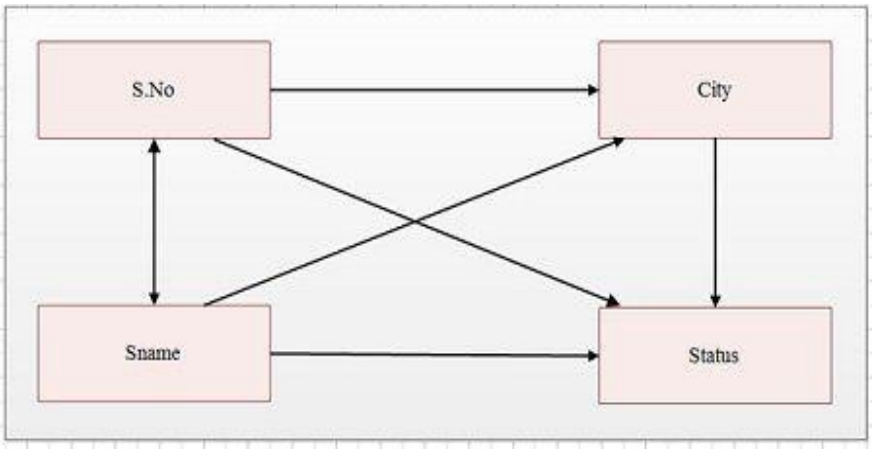
Dependency Diagram

A dependency diagram consists of the attribute names and all functional dependencies in a given table. Let us consider the following Supplier table

The Supplier Table

SNo.	Sname	Status	City
S1	Suneet	20	Qadian
S2	Ankit	10	Amritsar
S3	Amit	10	Amritsar

The dependency diagram of Supplier table is –



Naming conventions

When designing a database schema, the choice of names for entity types, attributes, relationship types, and (particularly) roles is not always straightforward. One should choose names that convey, as much as possible, the meanings attached to the different constructs in the schema. We choose to use *singular names* for entity types, rather than plural ones, because the entity type name applies to each individual entity belonging to that entity type. In our ER diagrams, we will use the convention that entity type and relationship type names are uppercase letters, attribute names have their initial letter capitalized, and role names are lowercase letters.

Design Issues

It is occasionally difficult to decide whether a particular concept in the miniworld should be modeled as an entity type, an attribute, or a relationship type. In general, the schema design process should be considered an iterative refinement process, where an initial design is created and then iteratively refined until the most suitable design is reached. Some of the refinements that are often used include the following:

A concept may be first modeled as an attribute and then refined into a relationship because it is determined that the attribute is a reference to another entity type. It is often the case that a pair of such attributes that are inverses of one another are refined into a binary relationship. Once an attribute is replaced by a relationship, the attribute itself should be removed from the entity type to avoid duplication and redundancy.

Conversion of ER diagram into relational table

The basic rules for converting the ER diagrams into tables are-

- Convert all the Entities in the diagram to tables. All the entities represented in the rectangular box in the ER diagram become independent tables in the database. All single valued attributes of an entity is converted to a column of the table. All the attributes, whose value at any instance of time is unique, are considered as columns of that table.
- Key attribute in the ER diagram becomes the Primary key of the table.
- Declare the foreign key column, if applicable.
- Any multi-valued attributes are converted into new table.
- Any composite attributes are merged into same table as different columns.
- One can ignore derived attribute, since it can be calculated at any time.